

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

CLAIMS

WHAT IS CLAIMED:

1. A method, comprising:
sighting a position correlated to at least a subset of a three-dimensional data set
representing a field of view; and
targeting a controlled system to the position from the three-dimensional data set.
2. The method of claim 1, wherein the three-dimensional data comprises
LADAR data.
3. The method of claim 1, further comprising at least one of:
acquiring the three-dimensional data;
processing the three-dimensional data;
displaying a representation of the three-dimensional data;
displaying a projected target point after the controlled system is targeted; and
taking an action responsive to targeting the position.
4. The method of claim 3, wherein acquiring the three-dimensional data includes:
transmitting a plurality of LADAR pulses; and
receiving the LADAR pulses after they are reflected.
5. The method of claim 3, wherein processing the three-dimensional data
includes generating a three-dimensional image from the three-dimensional data.
6. The method of claim 5, wherein the three-dimensional image is the
representation.
7. The method of claim 5, wherein generating the three-dimensional image
includes:
pre-processing the three-dimensional data;
detecting a target represented by a subset of the three-dimensional data;
segmenting the subset from the remainder of the three-dimensional data;
extracting features of the target from the segmented data; and
classifying the segmented subset as including a particular kind of target based on the
extracted features.

1 8. The method of claim 1, wherein sighting the position indicating a portion of a
2 displayed image generated from the three-dimensional data.

1 9. The method of claim 8, wherein targeting the controlled system includes
2 aiming a weapon system at the sighted position.

1 10. The method of claim 1, wherein targeting the controlled system includes
2 aiming a weapon system at the sighted position.

1 11. An apparatus, comprising:
2 a program storage medium capable of storing a three-dimensional data set
3 representing a field of view;
4 a controller capable of generating a presentation of the three-dimensional data set;
5 a controller interface through which a position represented by at least a subset of the
6 three-dimensional data can be sighted and through which the position can be
7 targeted from the subset.

1 12. The apparatus of claim 11, wherein the program storage medium comprises a
2 magnetic program storage medium or an optical program storage medium.

1 13. The apparatus of claim 11, wherein the magnetic program storage medium
2 comprises a floppy disk, a zip disk, or a hard disk.

1 14. The apparatus of claim 12, wherein the optical program storage medium
2 comprises an optical disk.

1 15. The apparatus of claim 11, wherein the controller comprises a digital
2 processor.

1 16. The apparatus of claim 15, wherein the digital processor is a microprocessor
2 or a digital signal processor.

1 17. The apparatus of claim 11, wherein the controller interface includes a display.

1 18. The apparatus of claim 17, wherein the display is a helmet-mounted display or
2 a rack-mounted display.



US200403244094

Creation date: 03-24-2004
Indexing Officer: DCOOPER2
Simplex
B&W

(25)

3641

Paper Package ID	Leading Doccode	Application/Appeal Number
US 1006056503P1	IIFW	10060565
US 1006056504P1	IDS	10060565
US 1006056505P1	C.AD	10060565
US 1006056506P1	CTRS	10060565
US 1006056507P1	A...	10060565
US 1006056508P1	CTNF	10060565
US 1006056509P1	SRNT	10060565

Total number of pages: 137

Date of delivery to the SC

Scanned by

Barcodes read by

Number of packages rejected
(Please mark packages above)

Batch on CDR

Batch rejected

19. The apparatus of claim 11, wherein the display includes a touch screen.

20. The apparatus of claim 17, wherein the controller interface includes at least one peripheral input/output device.

21. A controlled system, comprising:

a data acquisition system capable of acquiring a three-dimensional data set representing a field of view;

a sighting and targeting subsystem, including:

a program storage medium capable of storing the three-dimensional data set;

a controller capable of generating a presentation of the three-dimensional data set; and

a controller interface through which a position represented by at least a subset of the three-dimensional data can be sighted and through which the position can be targeted from a presentation of the subset;

a control subsystem capable of implementing instructions from the sighting and targeting subsystem.

22. The controlled system of claim 21, wherein the data acquisition system includes a LADAR system.

23. The controlled system of claim 21, wherein the LADAR system comprises a direct diode LADAR system.

24. The controlled system of claim 21, wherein the control subsystem comprises a weapon pointing system.

25. A method, comprising:

acquiring a three-dimensional data set representing the content of a field of view;

generating a three-dimensional representation of the content from the three-dimensional data set;

displaying the three-dimensional representation;

sighting a position within the field of view from the three-dimensional representation;

and

targeting the sighted position using the three-dimensional data set.

1 26. The method of claim 25, wherein acquiring the three-dimensional data set
2 includes:

3 transmitting a plurality of light pulses; and
4 receiving a plurality of the transmitted light pulses upon their reflection by an object
5 in the field of view.

1 27. The method of claim 26, further comprising:
2 extracting the three-dimensional data from the received light pulses; and
3 storing the received light pulses in a row column format.

1 28. The method of claim 25, wherein generating the three-dimensional
2 representation includes:
3 detecting a region of interest in the three-dimensional image;
4 segmenting a target in the region of interest from the three-dimensional image;
5 extracting features of the segmented target; and
6 classifying the target from the extracted features.

1 29. The method of claim 25, further comprising pre-processing the three-
2 dimensional data.

1 30. The method of claim 25, further comprising transmitting the generated three-
2 dimensional image to a remote location before displaying the three-dimensional image.

1 31. An apparatus, comprising:
2 means for sighting a position correlated to at least a subset of a three-dimensional data
3 set representing a field of view; and
4 means for targeting a controlled system to the position from the three-dimensional
5 data set.

1 32. The apparatus of claim 31, wherein the three-dimensional data comprises
2 LADAR data.

1 33. The apparatus of claim 31, further comprising at least one of:
2 means for acquiring the three-dimensional data;
3 means for processing the three-dimensional data;

means for displaying a representation of the three-dimensional data;
means for displaying a projected target point after the controlled system is targeted;
and
means for taking an action responsive to targeting the position.

34. The apparatus of claim 31, wherein targeting the controlled system includes aiming a weapon system at the sighted position.

35. An apparatus, comprising:
means for storing a three-dimensional data set representing a field of view;
means for generating a presentation of the three-dimensional data set;
means for sighting a position represented by at least a subset of the three-dimensional data and for targeting the position from the subset.

36. The apparatus of claim 35, wherein the storing means comprises a magnetic program storage medium or an optical program storage medium.

37. The apparatus of claim 35, wherein the generating means comprises a digital processor.

38. The apparatus of claim 35, wherein the sighting and targeting means includes a display.

39. The apparatus of claim 21, wherein the program storage medium comprises a magnetic program storage medium or an optical program storage medium.

40. The apparatus of claim 21, wherein the magnetic program storage medium comprises a floppy disk, a zip disk, or a hard disk.

41. The apparatus of claim 21, wherein the controller comprises a digital processor.

42. The apparatus of claim 21, wherein the controller interface includes a display.

43. The apparatus of claim 21, wherein the display includes a touch screen.

44. The method of claim 25, wherein sighting the position indicating a portion of a displayed image generated from the three-dimensional data.